

WHAT IS CLAIMED IS:

1. A disk array comprising:

a plurality of disk units;

a spare disk unit serving as a spare for said disk units;

a first control unit, to be connected to a host unit, for controlling input and output between said host unit and said disk array;

a second control unit, connected to said spare disk and said disk units, for controlling input and output between said first control unit and said disk units and controlling transfers between said disk units;

a common memory which stores disk management data indicating a status of each of said disk units; and

multiplex communication channels connecting said disk units, said spare disk and said second control unit,

wherein data transfer in each multiplex communication channel is controlled by said second control unit, and data transfer speed of said multiplex communication channel is higher than that of each of said disk units and an error correcting code (ECC) group is set across a plurality of the multiplex communication channels for error correcting operation on data in the disk units connected to said plurality of the multiplex communication channels.

2. A disk array according to claim 1, wherein said second control unit transmits or receives a command to or from a certain one of said disk units and said spare disk and writes data of said certain disk unit into said spare disk.

3. A disk array according to claim 1, wherein said disk array is provided with a plurality of communication channels, and a switch is provided to interconnect said communication channels so that communication can be made between said disk units connected to said respective communication channels, and a processing is made through said switch between said disk units and said spare disk connected to another communication channel.

4. A disk array according to claim 3, wherein when a first control portion of a first one of said communication channels cannot operate, a first disk unit of said disk units is accessed from a second control portion through said switch.

5. A disk array according to claim 1, wherein said disk array is provided with a plurality of communication channels, and a parity group is constructed by said disk units connected to other communication channels.

6. A disk array according to claim 1, wherein said communication channel is a loop made of a fiber channel capable of time division multiplex communication.

7. A disk array comprising:
a plurality of disk units;
a first control unit, to be connected to a host unit, for controlling input and output between said host unit and said disk array;

a second control unit, connected to said disk units, for controlling input and output between said first control unit and said disk units and controlling transfers between said disk units;

a common memory which stores disk management data indicating a status of each of said disk units; and

multiplex communication channels connecting said disk units and said second control unit,

wherein data transfer in each multiplex communication channel is controlled by said second control unit, and data transfer speed of said multiplex communication channel is higher than that of each of said disk units and an error correcting code (ECC) group is set across a plurality of the multiplex communication channels for error correcting operation on data in the disk units connected to said plurality of the multiplex communication channels.

8. A disk array according to claim 7, wherein said second control unit transmits or receives a command to or from a certain one of said disk units and writes data of said certain disk unit into another one of said disk units.

9. A disk array according to claim 7, wherein said disk array is provided with a plurality of communication channels, and a switch is provided to interconnect said communication channels so that communication can be made between said disk units connected to said respective communication channels, and a processing is made through said switch between said disk units connected to another communication channel.

10. A disk array according to claim 9, wherein when a first control portion of a first one of said communication channels cannot operate, a first disk unit of said disk units is accessed from a second control portion through said switch.

11. A disk array according to claim 7, wherein said disk array is provided with a plurality of communication channels, and a parity group is constructed by said disk units connected to other communication channels.

12. A disk array according to claim 7, wherein said communication channel is a loop made of a fiber channel capable of time division multiplex communication.

13. A disk array comprising:

- a plurality of disk units;
- a spare disk unit serving as a spare for said disk units;
- a first control unit, to be connected to a host unit, for controlling input and output between said host unit and said disk array;
- a second control unit, connected to said spare disk and said disk units, for controlling input and output between said first control unit and said disk units and controlling transfers between said disk units; and
- multiplex communication channels connecting said disk units, said spare disk and said second control unit,

wherein data transfer in each multiplex communication channel is

controlled by said second control unit, and data transfer speed of said multiplex communication channel is higher than that of each of said disk units and an error correcting code (ECC) group is set across a plurality of the multiplex communication channels for error correcting operation on data in the disk units connected to said plurality of the multiplex communication channels.

14. A disk array according to claim 13, wherein said second control unit transmits or receives a command to or from a certain one of said disk units and said spare disk and writes data of said certain disk unit into said spare disk.

15. A disk array according to claim 13, wherein said disk array is provided with a plurality of communication channels, and a switch is provided to interconnect said communication channels so that communication can be made between said disk units connected to said respective communication channels, and a processing is made through said switch between said disk units and said spare disk connected to another communication channel.

16. A disk array according to claim 15, wherein when a first control portion of a first one of said communication channels cannot operate, a first disk unit of said disk units is accessed from a second control portion through said switch.

17. A disk array according to claim 13, wherein said disk array is provided with a plurality of communication channels, and a parity group is constructed by said disk units connected to other communication channels.

18. A disk array according to claim 13, wherein said communication channel is a loop made of a fiber channel capable of time division multiplex communication.

19. A disk array comprising:
a plurality of disk units;
a first control unit, to be connected to a host unit, for controlling input and output between said host unit and said disk array;
a second control unit, connected to said disk units, for controlling input and output between said first control unit and said disk units and controlling transfers between said disk units; and
multiplex communication channels connecting said disk units and said second control unit,
wherein data transfer in each multiplex communication channel is controlled by said second control unit, and data transfer speed of said multiplex communication channel is higher than that of each of said disk units and an error correcting code (ECC) group is set across a plurality of the multiplex communication channels for error correcting operation on data in the disk units connected to said plurality of the multiplex communication channels.

20. A disk array according to claim 19, wherein said second control unit transmits or receives a command to or from a certain one of said disk units and writes data of said certain disk unit into another one of said disk units.

21. A disk array according to claim 19, wherein said disk array is provided with a plurality of communication channels, and a switch is provided to interconnect said communication channels so that communication can be made between said disk units connected to said respective communication channels, and a processing is made through said switch between said disk units connected to another communication channel.

22. A disk array according to claim 21, wherein when a first control portion of a first one of said communication channels cannot operate, a first disk unit of said disk units is accessed from a second control portion through said switch.

23. A disk array according to claim 19, wherein said disk array is provided with a plurality of communication channels, and a parity group is constructed by said disk units connected to other communication channels.

24. A disk array according to claim 19, wherein said communication channel is a loop made of a fiber channel capable of time division multiplex communication.